

Design and construction of industrial solar collectors in China

A historical introduction into the application of solar energy is attempted followed by a description of the various types of collectors including flat-plate, compound parabolic, evacuated tube ...

Highlights o A methodology for the design of solar collectors networks is introduced. o Network structure represented by a series-parallel collector arrangement. o ...

Some modifications to enhance the performance of solar collectors involve implementing changes to construction materials and the use of new working fluid. Kizildag et al [5] developed prototypes of flat plate solar collectors that absorb between 2.5 and 1.4 times more solar energy than standard collectors during winter and spring. This ...

Contrary, scarce examples of industrial solar ponds can be found. The aim of this paper is to describe the design, construction, and operation of a 500 m² industrial solar pond in Granada (Spain). This solar pond was constructed with the purpose of delivering a heat stream of up to 60 °C to minimize the fuel oil consumption at the mineral ...

Despite about five decades of development, commercial solar energy has not yet been able to penetrate the electric and gas options. For this particular reason, designing compound parabolic concentrators-photovoltaic thermal solar collectors (CPC-PVT) continues until achieving similar or greater performance with a comparative cost.

Flat plate solar collectors are simplest, cost effective and popular solar energy harvesting systems. Progressive advancement in flat plate solar collector has been contributed by modification in design, insulation material, process improvement and advanced working fluids (nano-fluids) of vast varieties.

/day: China--5.5, Bangladesh--5, and India--4 to 7, South Europe--5, North Europe--3. ... present status, suitable solar collectors, design and integration aspects, performance ... that this collector has great potential in industrial, residential and agricultural sectors. Umair et al. [7] designed and evaluated CPC with wings angled ...

The performance of a thermal collector can be evaluated by determination of thermal efficiency in steady state test of solar simulators. This paper presents design and construction of an efficient ...

Abstract This work presents the design, construction and investigation of experimental study of a Parabolic Trough Solar Collector (PTSC). It is a construction of a matrix of mirrors to form the ...

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Required collector area for a process heating system can be estimated as (1) $SCA = \frac{PHR}{h_{ic} (GHI_d)}$ where PHR represents the rate of process heat requirement (kW_{th}), GHI_d the chosen design value of GHI assumed to be incident on the aperture of the solar collector (W/m²). h_{ic} the thermal efficiency of solar energy utilization of solar collector at ...

ETC is the most predominant in solar collector technology used worldwide for both glazed and unglazed [169]. Unglazed solar collectors have been predominantly used for solar pool heating systems and they dominate the US solar market [42]. These unglazed collectors of several commercial types are not commonly used as solar collectors with glazing.

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